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Self-Monitoring or Reliance on Media Reporting: How Do Financial Market Participants Process Central Bank News?

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How Do Financial Market Participants Process Central Bank News?

Abstract

We study how financial market participants process news from four major central banks—the Bank of England (BoE), the Bank of Japan (BoJ), the European Central Bank (ECB), and the Federal Reserve (Fed)—using a novel survey of 195 financial market participants from around the world. Our results indicate that, first, respondents rely more on media reports of central bank events than they do on self-monitoring. The only exceptions are interest rate decisions in the respondent's home region. In general, the Fed is watched most closely, followed by the ECB, the BoJ, and the BoE. Second, ordered probit estimations reveal that the perceived reliability of media coverage is negatively associated with degree of self-monitoring and positively related to the probability of using media reports, particularly in the case of asset managers. The perceived importance of central bank events is positively related to the degree of self-monitoring in the case of traders. Finally, portfolio managers tend to self-monitor their home central bank more often than do respondents from other parts of the world.

Keywords: Central Bank Communication, Financial Market Participants, Information Processing, Interest Rate Decisions, Media Reporting, Reliability, Survey.

JEL: D83, E52, E58.

1. Introduction

Over the past two decades, the 'art' of central bank watching has changed substantially. For instance, prior to February 1994, market participants had to infer from open market operations whether and, if so, to what extent, the Federal Reserve's (Fed) policy stance had changed (Poole, 2005). From the mid-1990s, however, and right up until the outbreak of the recent financial crisis, central banks increasingly used communication for explaining past interest rate decisions and preparing market participants for upcoming decisions.[1] In recent years, with interest rates stuck at the zero lower bound, some central banks (e.g., the Fed and the Bank of Canada) have gone one step further. They have introduced 'conditional commitments' to keep the interest rate at this ultra-low level, where the conditionality is based on the development of specific macroeconomic variables.

Given the flood of daily information to which financial agents are exposed, it is unlikely that they are able to directly monitor all action by and communication from the many central banks, not to mention the vast number of worldwide macroeconomic news and company-specific announcements. Financial agents are time constrained and, to a greater or lesser extent, must rely on the media, particularly newswire services, to digest this flood of information.[2] Indeed, Neuenkirch (2014) shows that financial market news is not necessarily created at the time the information becomes available, but comes into existence only after it undergoes a filtering process by Reuters.[3]

However, there are at least two risks of relying on media reporting. First, media agencies might be *selective* in their coverage, thereby ignoring certain events they consider non-newsworthy. Indeed, Neuenkirch (2014) finds that Reuters disregards the majority of speeches by the lesser-known Fed presidents. There is even some evidence that the media attempts to 'sell' news to financial markets, as the probability of media coverage is higher if there has not been any communication for a while or it occurs right before the weekend. In addition, Berger et al. (2013) show that extreme views about the ECB receive more coverage and that especially negative views are reported more extensively. Finally, Hayo and Neuenkirch (2010) conclude that newswire reports of

[1] There is a growing body of literature investigating the effects of central bank communication. For a comprehensive survey of the relevant literature, see Blinder et al. (2008).
[2] In a seminal paper, Sims (2003) provides a theoretical framework for information-processing constraints in macroeconomic models.
[3] See also Hendry (2012).

central bank communications are not a substitute for the whole range of original communications when predicting the Fed's target rate decisions.

Second, there is the risk of *misinterpretation*, which is so aptly described by former Fed Governor Laurence Meyer (The Region, 1998): 'The primary difficulty is the variety of interpretations that are given to what you say, especially by the different wire services. So, you try to be disciplined and communicate as effectively as you can, and then you give a speech and get 10 varying interpretations of what you said, often with a lot of liberties taken in the interpretation'.

Therefore, it must be kept in mind that the media's coverage of central bank events—both what it covers and how—may influence the public's perception of what happened. A different strand of literature suggests that media coverage is affected by the views and preferences of the audience. A media provider's success depends on a continuing demand for its products and services (e.g., Mullainathan and Shleifer, 2005; Hamilton, 2004) and Gentzkow and Shapiro (2010) show that news reporting responds strongly to consumer preferences.

By asking financial market participants about how they process news from four major central banks—the Bank of England (BoE), the Bank of Japan (BoJ), the European Central Bank (ECB), and the Fed—this paper examines whether financial agents monitor central bank actions and communications directly or instead rely on media reporting. The analysis is based on a unique dataset of 195 market participants from various financial institutions located throughout the world that was collected by Barclays Europe in 2013 using an extensive questionnaire jointly developed with us.

In the first part of our analysis, we study (i) how financial agents monitor central bank actions and communications, (ii) how they perceive the persistence of the impact of central bank news on financial markets (as a proxy for the relative importance of this news), and—in light of the previous discussion—(iii) how they evaluate the reliability of media coverage of central bank actions and communications. In the second part, we estimate ordered probit models and relate the two different types of central bank watching to the perceived importance of central bank events and the reliability of media coverage.

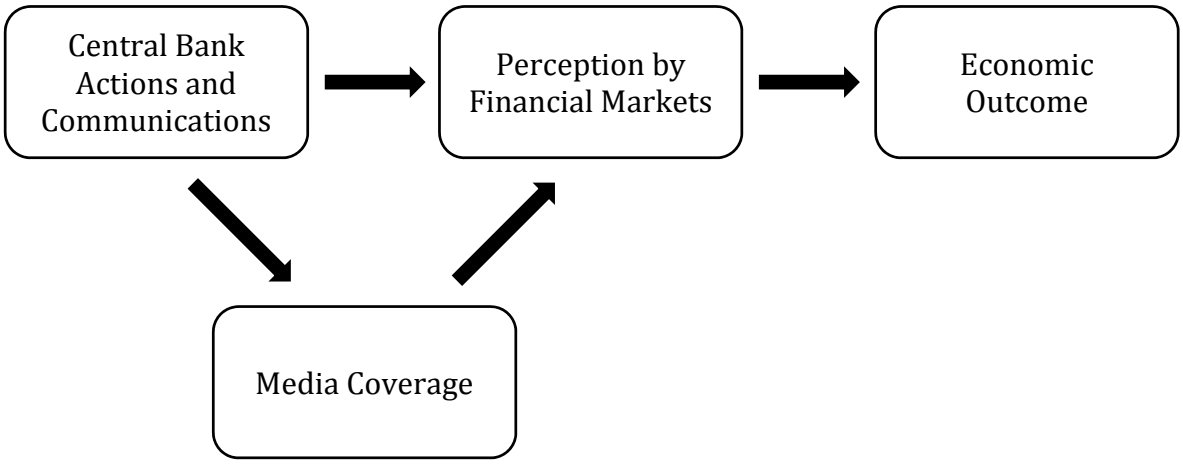
The paper contains a methodological innovation. To the best of our knowledge, and consistent with a literature review conducted by Blinder et al. (2008), this is the

first paper to take a closer look at how financial agents process central bank news.[4] Typically, the usefulness of central bank action and, in particular, central bank communication is evaluated by (i) its impact on financial markets (see the extensive survey by Blinder et al., 2008), (ii) its value in predicting future interest rate decisions (Jansen and de Haan, 2009; Hayo and Neuenkirch, 2010; Sturm and de Haan, 2011), or (iii) its role in the monetary policy transmission process (Neuenkirch, 2013). Figure 1 summarises this standard view.

Figure 1: Standard View of Central Bank Action and Communication

This stylised standard view is an oversimplification, as the effect of central bank action and communication on economic outcomes is undoubtedly complex (see also Woodford, 2005). Central bankers' crucial task is to influence the expectations of economic agents, which in turn will lead to changes in the economic outcome. Therefore, we believe that Figure 2 more realistically describes the actual transmission process.

Figure 2: More Realistic View of Central Bank Action and Communication



How action and communication are *perceived* is a crucial component in this process. In addition, it is important to know the extent to which the media serve as news

[4] A different part of the questionnaire is used as input for a study on the special role of central bank communication during the financial crisis (see Hayo and Neuenkirch, 2014).

transmitters in the sense that they select central bank events that are—in their view—newsworthy and provide financial agents with an interpretation of these events. Both issues, the perception by financial markets and the role of the media, are neglected in the literature. Thus, by studying how economic agents monitor central bank news, this paper highlights some novel aspects of how interest rate decisions and communication affect economic outcomes.

A related strand of literature explores the role of the media in transmitting central bank communication to the general public (de Haan et al., 2004; Reid and du Plessis, 2011; Lamla and Sturm, 2013). The tone of media communications about central banks is assessed in Berger et al. (2011) and Böhm et al. (2012). Ehrmann and Fratzscher (2009) study how explanations of monetary policy decisions at press conferences are perceived by financial markets. Our paper also contributes to that branch of the finance literature that uses surveys of financial market participants to achieve insight into, for example, information acquisition and trading behaviour (see, e.g., Shiller and Pound, 1989; Menkhoff, 1998; Cheung and Chinn, 2001; Oberlechner and Hocking, 2004; Menkhoff and Nikiforow, 2009). However, none of these papers studies the media's role in shaping perceptions of financial market participants in regard to central bank communication and action.

The remainder of this paper is organised as follows. Section 2 introduces the survey and provides some descriptive statistics. Section 3 presents the empirical methodology. Section 4 discusses the empirical results of the survey. Section 5 concludes.

2. The Survey

The survey was conducted by Barclays Europe between 17 April and 1 May 2013.[5] All subscribers to Barclay's fixed income newsletter were invited via e-mail to participate in an online survey. A diverse set of 844 Barclays clients working in execution, trading, portfolio management, liability management, financial analysis, economic analysis, or in the press department started the survey. However, to ensure that we capture only financial market actors, we focus on those 360 respondents who are 'direct' financial market participants working in execution/trading or 'indirect' market participants

[5] Barclays also surveyed market participants in August 2007 and August 2008, but none of the questions we focus on was included in these earlier surveys.

working in asset allocation or portfolio/liability management.[6] Regrettably, a notable number of participants did not fully complete the questionnaire, and thus our final sample consists of 195 financial market actors who responded to at least one question relevant for our analysis with an answer other than 'no opinion/no answer'.[7] Our sample consists of 24 asset allocators, 70 traders, and 101 portfolio managers—from all over the world.[8] A general analysis of the recent round of survey data, targeted to Barclays' clients, can be found in Barclays (2013).

In the following subsections, we introduce the survey questions relevant for this paper and discuss some descriptive results. Respondents were asked to answer the questions separately for four central banks: the BoE, the BoJ, the ECB, and the Fed. After completing the survey, respondents were given the opportunity to comment on the general theme of the survey, that is, central bank communication. We occasionally refer to these comments, as they contribute some depth to the answers to the structured questions; in a sense, taking the comments into consideration combines our quantitative analysis with some aspects of a qualitative analysis.

2.1. Monitoring Central Bank Events

Our analysis starts with the question of how market participants monitor interest rate decisions and speeches.

Q1a:	How do you monitor the *interest rate decisions* by the BoE/BoJ/ECB/Fed? I read the press releases or watch the press conferences.
Q1b:	How do you monitor the *interest rate decisions* by the BoE/BoJ/ECB/Fed? I rely on media reporting.
Q1c:	How do you monitor *speeches* by the BoE/BoJ/ECB/Fed officials? I read the transcript/manuscript or watch/listen to the speech.

[6] Thus, we exclude any respondent who works as an analyst/economist or in the press/media department, as well as all participants who did not specify their position.

[7] Seventy of these 360 respondents did not answer a single question other than those asking about their position and location. Participants always had the option of answering 'no opinion/no answer' or of skipping a question.

[8] Africa and Middle East: 10 respondents (5% of total respondents); Australasia/Asia (excluding Japan): 19 (10%); Europe (excluding the UK): 44 (23%); Japan 33 (17%); North America: 43 (22%); South America: 4 (2%); United Kingdom: 42 (22%).

Q1d:	How do you monitor *speeches* by the BoE/BoJ/ECB/Fed officials? I rely on media reporting.

Survey participants were asked to answer the four questions *separately* on a four-point scale (1 = never, 2 = occasionally, 3 = often, 4 = always). This setup allows capturing a situation where financial market actors self-monitor central bank actions and communications and, at the same time, rely on media reporting. Table 1 summarises the mean answers for the four questions across central banks.

Table 1: Monitoring Interest Rate Decisions and Speeches

	Total	Home	Non-H.	Diff. Sign.		Asset	Trader	Portf.
Bank of England								
(1) IR: Self-Monit.	2.4	2.9	2.3	**8.5**	**[0.00]**	2.1	2.5	2.5
(2) IR: Media Rep.	2.9	3.1	2.8	3.4	[0.06]	2.7	3.0	2.9
(3) Sp.: Self-Monit.	2.0	2.2	1.9	**4.6**	**[0.03]**	1.8	2.1	2.0
(4) Sp.: Media Rep.	2.7	3.1	2.6	**8.2**	**[0.00]**	2.5	2.8	2.7
Bank of Japan								
(1) IR: Self-Monit.	2.3	3.3	2.1	**32.0**	**[0.00]**	2.2	2.3	2.3
(2) IR: Media Rep.	3.0	3.0	3.0	0.2	[0.63]	2.6	3.1	3.0
(3) Sp.: Self-Monit.	1.8	2.2	1.8	**9.5**	**[0.00]**	1.7	1.8	1.9
(4) Sp.: Media Rep.	2.7	2.7	2.7	0.1	[0.79]	2.2	2.8	2.8
ECB								
(1) IR: Self-Monit.	2.9	3.4	2.8	**12.1**	**[0.00]**	2.6	2.8	3.0
(2) IR: Media Rep.	3.0	3.0	3.1	0.1	[0.75]	3.1	3.0	3.1
(3) Sp.: Self-Monit.	2.2	2.4	2.1	**4.2**	**[0.04]**	2.0	2.2	2.2
(4) Sp.: Media Rep.	2.9	2.8	2.9	0.2	[0.66]	2.8	2.8	2.9
Federal Reserve								
(1) IR: Self-Monit.	3.1	3.4	3.0	**3.9**	**[0.05]**	3.1	2.9	3.2
(2) IR: Media Rep.	3.1	2.9	3.1	1.2	[0.27]	3.0	3.1	3.1
(3) Sp.: Self-Monit.	2.3	2.3	2.3	0.0	[0.85]	2.2	2.2	2.4
(4) Sp.: Media Rep.	3.0	3.1	3.0	1.4	[0.24]	2.9	3.0	3.1

Notes: Coding: 1 = never, 2 = occasionally, 3 = often, 4 = always. The 'Home' column shows means from respondents located in the home region of the respective central bank compared to those from the rest of the world ('Non-H.'). Column 'Diff. Sign.' shows Chi^2-test statistics and p-values (in square brackets) of Kruskal-Wallis (1952, 1953) tests for differences in the medians across both groups. Test statistics in bold are significant at the 5% level.

Comparing attention level across central banks, the same pattern is seen for both self-monitoring of interest rate decisions (rows (1)) and using media reports to monitor speeches (rows (4)). The Fed is monitored most closely, followed by the ECB. The BoE

and the BoJ jointly rank third.[9] In the case of self-monitoring of speeches (rows (3)), the BoE ranks third behind the Fed and the ECB in the first and the second place, respectively, and the BoJ ranks fourth.[10] Finally, market participants rely on media reports for monitoring interest rate decisions (rows (2)) to the same degree for the BoJ, the ECB, and the Fed. Only the BoE's decisions are followed less often using media reports.[11]

There is a significant home bias ('Diff. Sign.' column in Table 1) in the self-monitoring of interest rate decisions for all four central banks. In addition, agents from Japan, Europe (excluding the UK), and the United Kingdom spend relatively more time self-monitoring speeches from their home central bank compared to respondents from another region. Finally, respondents from the UK use media reports to monitor speeches by the BoE significantly more often than do the other respondents.[12]

When considering the full sample ('Total' column in Table 1), we find that market participants rely more on media reporting to learn about interest rate decisions (rows (2)) and speeches (rows (4)) than on self-monitoring (rows (1) and (3)). The only exceptions are interest rate decisions by the ECB and the Fed.[13] A statement by one respondent is reflective of the above findings: 'We have Bloombergs; typically anything out on central banks comes across and is read here first'. Another survey participant emphasises another advantage of media reports by saying 'the better media organizations help to distil the cacophony of messages'.

There are significant differences between the means of home central bank watching ('Home' column in Table 1) and other central bank watching ('Non-H.'). Market participants rely more on media reporting than on self-monitoring when following other central banks (exception: interest rate decisions by the Fed).[14] Respondents also rely

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[9] z-statistics and p-values (in square brackets) for Wilcoxon (1945) matched-pairs signed-ranks tests for differences in (1) across central banks, 'Total': BoE vs. BoJ: 1.5 [0.14]; BoE vs. ECB: –7.0 [0.00]; BoE vs. Fed: –8.3 [0.00]; BoJ vs. ECB: –5.9 [0.00]; BoJ vs. Fed: –8.3 [0.00]; ECB vs. Fed: –3.2 [0.00].
Differences in (4) across central banks, 'Total': BoE vs. BoJ: –0.2 [0.81]; BoE vs. ECB: –3.1 [0.00]; BoE vs. Fed: –4.4 [0.00]; BoJ vs. ECB: –2.6 [0.01]; BoJ vs. Fed: –4.2 [0.00]; ECB vs. Fed: –3.0 [0.00].

[10] Differences in (3) across central banks, 'Total': BoE vs. BoJ: 2.5 [0.01]; BoE vs. ECB: –4.1 [0.00]; BoE vs. Fed: –5.4 [0.00]; BoJ vs. ECB: –4.9 [0.00]; BoJ vs. Fed: –6.8 [0.00]; ECB vs. Fed: –2.4 [0.02].

[11] Differences in (2) across central banks, 'Total': BoE vs. BoJ: –2.2 [0.03]; BoE vs. ECB: –3.1 [0.00]; BoE vs. Fed: –2.9 [0.00]; BoJ vs. ECB: –1.1 [0.27]; BoJ vs. Fed: –1.6 [0.12]; ECB vs. Fed: –0.7 [0.51].

[12] To conserve space, we do not report Kruskal-Wallis (1952, 1953) test statistics for differences in the medians across the three groups of financial market participants given on the right-hand side of Table 1. However, there is only one significant difference across the three groups, namely, in the case of relying on media reports to monitor BoJ speeches ($Chi^2(2) = 8.4$ [0.01]).

[13] (1) vs. (2), 'Total': BoE: –4.8 [0.00]; BoJ: –6.1 [0.00]; ECB: –1.4 [0.17]; Fed: 0.2 [0.80].
(3) vs. (4), 'Total': BoE: –8.0 [0.00]; BoJ: –8.2 [0.00]; ECB: –7.4 [0.00]; Fed: –7.8 [0.00].

[14] (1) vs. (2), 'Non-H.': BoE: –4.8 [0.00]; BoJ: –7.1 [0.00]; ECB: –2.6 [0.01]; Fed: –0.7 [0.46].

more on media reports when it comes to speeches in the home region. Regarding interest rate decisions in the home region, however, the picture is slightly different, as self-monitoring is as relevant as media reporting for the BoE, BoJ, and Fed, and even more relevant in the case of the ECB.[15]

Finally, there is less interest in speeches than in interest rate decisions, irrespective of whether speeches are monitored directly or via media reporting (exception: media reporting of interest rate decisions and speeches by the Fed).[16]

Table 2 provides a different view of how respondents monitor interest rate decisions. By using cross-tabulations, split for the home regions (left panel) and the rest of the world (right panel), we look at whether those respondents who intensively self-monitor interest rate decisions also pay close attention to media reports. In the interests of brevity, we only report the results for a pooled sample of all four central banks. Table 3 presents the results for the same exercise but with regard to central bankers' speeches.

There is a tendency for financial market participants to use media reports and self-monitoring with the same intensity, as 40% of the observations are on the main diagonal in the case of the home central bank and interest rate decisions (left panel of Table 2). In addition, the modal category is 4 = always/4 = always in this case. The figures for interest rate decisions by non-home central banks (30%) as well as speeches by the home central bank (35%) and non-home central banks (38%) are a bit smaller but nevertheless confirm that a substantial share of respondents stay informed using both means with the same intensity. In these three cases, the modal category is 2 = occasionally self-monitoring central bank events and 3 = often using media reports to follow these. The cross-tabulation also confirms that self-monitoring is relatively more prominent in the case of interest rate decisions of the home central banks than for the other events.

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(3) vs. (4), 'Non-H.': BoE: –6.9 [0.00]; BoJ: –7.8 [0.00]; ECB: –6.7 [0.00]; Fed: –6.8 [0.00]

[15] (1) vs. (2) 'Home': BoE: –1.2 [0.25]; BoJ: 1.1 [0.26]; ECB: 2.2 [0.03]; Fed: 1.9 [0.05].
(3) vs. (4) 'Home': BoE: –4.0 [0.00]; BoJ: –2.8 [0.01]; ECB: –3.1 [0.00]; Fed: –3.7 [0.00].

[16] (1) vs. (3) 'Total': BoE: 7.4 [0.00]; BoJ: 7.3 [0.00]; ECB: 9.5 [0.00]; Fed: 10.5 [0.00].
(2) vs. (4), 'Total': BoE: 2.9 [0.00]; BoJ: 4.6 [0.00]; ECB: 2.9 [0.00]; Fed: 1.4 [0.17].

Table 2: Monitoring Interest Rate Decisions—Cross-Tabulations

Home						**Non-Home**					
	Media						*Media*				
Self	1	2	3	4	Tot.	*Self*	1	2	3	4	Tot.
1	0%	1%	1%	4%	**5%**	1	1%	4%	6%	9%	**20%**
2	0%	4%	5%	8%	**17%**	2	0%	7%	16%	7%	**31%**
3	1%	10%	13%	5%	**29%**	3	1%	6%	12%	5%	**24%**
4	6%	11%	10%	23%	**50%**	4	2%	5%	7%	10%	**25%**
Tot.	**6%**	**25%**	**29%**	**39%**	**100%**	Tot.	**4%**	**22%**	**41%**	**32%**	**100%**

Notes: Coding: 1 = never, 2 = occasionally, 3 = often, 4 = always.

Table 3: Monitoring Speeches—Cross-Tabulations

Home						**Non-Home**					
	Media						*Media*				
Self	1	2	3	4	Tot.	*Self*	1	2	3	4	Tot.
1	1%	3%	4%	5%	**12%**	1	5%	7%	10%	10%	**32%**
2	1%	14%	28%	11%	**53%**	2	1%	16%	18%	6%	**41%**
3	1%	8%	16%	5%	**30%**	3	0%	4%	13%	4%	**20%**
4	1%	0%	0%	4%	**5%**	4	1%	1%	2%	4%	**7%**
Tot.	**3%**	**24%**	**48%**	**25%**	**100%**	Tot.	**7%**	**28%**	**42%**	**23%**	**100%**

Notes: Coding: 1 = never, 2 = occasionally, 3 = often, 4 = always.

2.2. Importance of Central Bank Events

A second set of questions is concerned with the persistence of the market impact of interest rate decisions and speeches.

Q2a: In your opinion, how persistent is the impact of *interest rate decisions* by the BoE/BoJ/ECB/Fed on financial markets?

Q2b: In your opinion, how persistent is the impact of *speeches* by BoE/BoJ/ECB/Fed officials on financial markets?[17]

The answer scale for these questions is: 5 = greater than one month, 4 = one month, 3 = one week, 2 = intra-day, and 1 = no persistence. We employ answers to these questions

[17] Since monetary policy committees (MPC) typically have a certain hierarchy, we ask this question separately for (i) the governor and (ii) other MPC members for the BoE and BoJ. In the case of the ECB and Fed, we distinguish between three types of speakers: (i) the president/chairman, (ii) board members, and (iii) national/regional central bank presidents. To create an aggregate measure of persistence, we use the average across speaker groups in each central bank.

as proxies for the subjective importance of central bank action and communication in the eyes of financial market participants. If, for instance, the impact of a central bank event on financial markets is perceived to last for a week, then this event is more important for market actors than another one that only causes some intra-day movement. Table 4 summarises the mean answers to the two questions across the four central banks.

Table 4: Subjective Persistence of Interest Rate Decisions and Speeches

	Total	Home	Non-H.	Diff. Sign.		Asset	Trader	Portf.
Bank of England								
Int. Rate Decisions	3.5	4.2	3.2	**14.4**	**[0.00]**	3.3	3.7	3.3
Speeches	2.4	3.0	2.2	**15.8**	**[0.00]**	1.9	2.6	2.4
Bank of Japan								
Int. Rate Decisions	3.6	4.1	3.5	**3.9**	**[0.05]**	4.1	3.6	3.5
Speeches	2.6	2.7	2.6	0.0	[0.89]	2.4	2.8	2.6
ECB								
Int. Rate Decisions	3.8	3.9	3.8	0.3	[0.56]	3.8	3.8	3.9
Speeches	2.6	2.8	2.6	3.1	[0.08]	2.5	2.6	2.7
Federal Reserve								
Int. Rate Decisions	4.1	4.3	4.0	1.5	[0.23]	4.4	4.2	4.0
Speeches	2.6	2.7	2.6	0.1	[0.77]	2.4	2.8	2.6

Notes: Coding: 1 = no persistence, 2 = intra-day, 3 = one week, 4 = one month, 5 = greater than one month. The 'Home' column shows means from respondents located in the home region of the respective central bank compared to those from the rest of the world ('Non-H.'). The 'Diff. Sign.' column shows Chi^2-test statistics and p-values (in square brackets) of Kruskal-Wallis (1952, 1953) tests for differences in the medians across both groups. Test statistics in bold are significant at the 5% level.

For all central banks, the impact of verbal communication is perceived to be much less persistent than the impact of interest rate decisions.[18] This is generally in line with empirical 'event' studies analysing the effect of announcements on financial markets (see, e.g., the survey by Neely and Dey, 2010). We find that at least one-third of the participants perceive the interest rate decisions of all four major central banks to have an impact that persists for more than one month. This complements 'news' studies in the extant literature, in which, typically, high-frequency data are employed, that is, daily observations or higher. One methodological problem of these approaches is that, by construction, it is difficult to show that announcements have a longer-term, economically relevant impact. Our survey results suggest that participants believe that

[18] z-statistics and p-values (in square brackets) for Wilcoxon (1945) matched-pairs signed-ranks tests for differences in the persistence of the impact of interest rate decisions and speeches, 'Total': BoE: 9.5 [0.00]; BoJ: 7.8 [0.00]; ECB: 9.6 [0.00]; Fed: 10.2 [0.00].

monetary policy actions have persistent effects and, thus, we contribute to the literature on the impact of 'news' on financial markets.

In addition, there is a distinct hierarchy in the persistence of the impact of interest rate decisions: the Fed ranks first, followed by the three other central banks.[19] In the case of speeches, we cannot statistically distinguish between the BoJ, the ECB, or the Fed, but it is clear that the BoE ranks last.[20] This ordering of the importance of central banks reflects the size of their respective economies.

The subjective assessment of the persistent impact of central bank events on financial markets exhibits a home bias, as survey participants from the UK evaluate the persistence of BoE events as longer compared to evaluations made by respondents from the rest of the world. Finally, we find evidence of a significant home bias in the case of the BoJ's interest rate decisions.[21]

2.3. Reliability of Media Coverage

A third question evaluates the media's reliability regarding coverage of central bank events.

Q3: In general, how reliable do you think the media coverage is of actions and communications by the BoE/BoJ/ECB/Fed?

The answer scale for this question is: 1 = unreliable, 2 = neither reliable nor unreliable, 3 = reliable, and 4 = very reliable. Table 5 summarises the mean answers across central banks.

In general, market participants are pleased with the media's coverage of central banks, as the mean answer is 'reliable' in all four cases. Media coverage of the Fed ranks

[19] Tests for differences in the persistence of the impact of interest rate decisions across central banks, 'Total': BoE vs. BoJ: –1.9 [0.06]; BoE vs. ECB: –3.8 [0.00]; BoE vs. Fed: –5.7 [0.00]; BoJ vs. ECB: –1.5 [0.14]; BoJ vs. Fed: –4.8 [0.00]; ECB vs. Fed: –4.0 [0.00].

[20] Tests for differences in the persistence of the impact of speeches across central banks, 'Total': BoE vs. BoJ: –3.7 [0.00]; BoE vs. ECB: –2.7 [0.01]; BoE vs. Fed: –2.4 [0.02]; BoJ vs. ECB: 1.3 [0.19]; BoJ vs. Fed: 0.6 [0.53]; ECB vs. Fed: 0.5 [0.59].

[21] To conserve space, we do not report Kruskal-Wallis (1952, 1953) test statistics for differences in the medians across the three groups of financial market participants given on the right-hand side of Table 4. Using this test, we find no significant differences across the groups at the 5% level.

first in terms of reliability, followed by the BoE. The BoJ and the ECB are jointly ranked last.[22] We find no evidence of a home bias at the 5% level of significance.[23]

Table 5: Reliability of Media Coverage

	Total	Home	Non-H.	Diff. Sign.		Asset	Trader	Portf.
Bank of England	3.2	3.2	3.1	0.6	[0.42]	3.0	3.2	3.2
Bank of Japan	3.0	2.8	3.1	3.6	[0.06]	2.8	3.1	3.1
ECB	3.1	3.1	3.0	0.5	[0.49]	3.0	3.0	3.1
Federal Reserve	3.4	3.3	3.4	0.1	[0.76]	3.3	3.4	3.3

Notes: Coding: 1 = unreliable, 2 = neither reliable nor unreliable, 3 = reliable, 4 = very reliable. The 'Home' column shows means from respondents located in the home region of the respective central bank compared to those from the rest of the world ('Non-H.'). the 'Diff. Sign.' column shows Chi^2-test statistics and p-values (in square brackets) of Kruskal-Wallis (1952, 1953) tests for differences in the medians across both groups. Test statistics in bold are significant at the 5% level.

This question generated several informal comments from survey participants that enrich the impression about the media's reliability. Interestingly, the opinions are less favourable when compared to the answers given to the structured survey questions. For instance, one respondent states: 'It really depends on the media disseminating the information and how much is "opinion" vs. "facts". … I do not mind interpretations as long as they are truly balanced and stated as interpretations'. Another participant makes a similar point: 'I think reporting of events should tell me right up front what happened … I would like less interpretation and more factual reporting'. One very interesting comment touches not only on liberties taken in media interpretations, but on the accuracy of reporting in general: 'Recent incorrect reporting by Bloomberg of an interest rate decision in Hungary (reported cut to 1% policy initially before correcting) and Colombia (reported a rate cut when rates were unchanged) raise concerns about the quality of financial reporting and the impact of incorrect information on financial markets. My confidence in the accuracy of headlines has decreased substantially and I am inclined to verify information with a source document. The incorrectly reported headlines moved [the Hungarian forint] significantly'.

Other respondents, however, defend the media, as they think the central banks themselves are responsible for creating diverging interpretations of the same event:

[22] z-statistics and p-values (in square brackets) for Wilcoxon (1945) matched-pairs signed-ranks tests for differences in the reliability across central banks, 'Total': BoE vs. BoJ: 3.6 [0.00]; BoE vs. ECB: 2.9 [0.00]; BoE vs. Fed: –5.2 [0.00]; BoJ vs. ECB: –1.1 [0.29]; BoJ vs. Fed: –6.1 [0.00]; ECB vs. Fed: –6.5 [0.00].

[23] To conserve space, we do not report Kruskal-Wallis (1952, 1953) test statistics for differences in the medians across the three groups of financial market participants given on the right-hand side of Table 5. Using this test, we find no significant differences across the groups at the 5% level.

'Central Banks need to … reduce the jargon that only very few outside central banks understand and feel at ease with'. Another participant puts forward an interesting proposal: 'Central bank announcements are (naturally) divorced from comment and analysis of the same. Hence, some kind of synthesis would be a good idea, with accredited analysts and academics being able to post analysis, observations, and criticisms to the central bank websites. This would be a lot better than having to rely on the media for interpretation'.

Finally, we need to emphasise a caveat when it comes to interpreting answers to Q1b, Q1d, and, Q3. The term 'media' incorporates newswire services but also, for instance, newspapers and television. Consequently, respondents might have different types of media in mind when answering how often they rely on media reporting to monitor central bank events or when they assess the reliability of media coverage. In our analysis, we cannot control for these potentially different interpretations.

3. Empirical Methodology

Next, we employ a multivariate framework to relate the two different ways of monitoring central bank action and communication to the perceived importance of central bank events and the reliability of media coverage. Given the ranking of answers in our dependent variables, we use ordered probit models as the estimation technique for four different left-hand-side variables: self-monitoring interest rate decisions (Q1a), self-monitoring speeches (Q1c), relying on media reports to follow central bank actions (Q1b), and relying on media reports to follow central bank communications (Q1d). The perceived market persistence of the impact of interest rate decisions (Q2a) and speeches (Q2b), as well as the reliability of media coverage (Q3), serve as explanatory variables. We estimate separate models for the three different groups of financial market participants in our sample (asset allocation, execution/trading, and portfolio/liability manager) to discover whether there are differences across groups.

Since all participants were asked the same questions for each of the four central banks, we conduct our analysis in a quasi-panel setup.[24] There are three key advantages of this approach compared to estimating separate models for each central bank. First,

[24] As part of our robustness tests, we estimated Equation (1) for two groups of financial market participants, traders and portfolio managers, separately for all four central banks. The central-bank-specific estimates and their standard errors for both traders and portfolio managers are virtually the same compared to those in Tables 6–9. Results are available on request.

estimation in a pooled model takes into account the expectation that individuals' views about communication are not independently distributed across the four central banks. Second, a quasi-panel setup allows directly comparing coefficients and implementing more efficient statistical tests in the context of one nested model. Third, a pooled setup allows us to obtain direct estimates of a home bias, that is, the difference in the central-bank-fixed effect between survey participants living in the respective central bank's home region and those living in other parts of the world.

However, a potentially serious drawback of panel estimation is the imposition of wide-ranging homogeneity restrictions on the estimated parameters. Here, we have a sufficiently large number of observations to let the coefficients of the explanatory variables vary across central banks, that is, our specification does not make *a priori* homogeneity assumptions. Thus, while avoiding estimation biases by allowing for heterogeneity of participants' answers with respect to the four central banks, the resulting models are more efficiently estimated.

Our general specification is as follows:

$$(1)\ y_{i,k}^{*} = \alpha_k^{CB} + \alpha_i^{Loc} + \gamma' X_{i,k} + \varepsilon_{i,k}.$$

$y_{i,k}^{*}$ is the latent continuous variable representing the ordinal choice for monitoring central bank k's interest rate decisions/speeches directly/via media reports by survey participant i. Central-bank-fixed effects are captured by α_k^{CB} and location-fixed effects by α_i^{Loc}. γ denotes the coefficients for the vector of explanatory variables $X_{i,k}$. We explain the decision about how to monitor a certain central bank event by the event's perceived importance and the reliability of its media coverage.[25] Since our descriptive analysis indicates the presence of a home bias, we also include a vector of indicator variables to describe this phenomenon. The residuals $\varepsilon_{i,k}$ are assumed to follow a standard normal distribution and the ordered probit models are estimated by maximum likelihood. We employ standard errors clustered at the respondents' level (Rogers, 1993), as our survey design does not ensure that the observations are identically distributed and the pooled setup leads to intra-group correlation in the standard errors of each respondent.

The estimated coefficients of ordered probit models are difficult to interpret, as they measure the influence of the explanatory variables on the latent variable $y_{i,k}^{*}$.

[25] As part of our robustness tests, we estimated a version of Equation (1) where we include interaction terms between the reliability of media coverage and the importance of central bank events. In general, including interaction terms does not improve the models. The interaction effects are individually insignificant at the 5% level in 42 out of 48 cases. A joint Wald exclusion test of the interaction terms of all four central banks does not reject the null hypothesis at the 5% significance level in all but three cases. Results are available on request.

Marginal effects, in contrast, measure changes in the probability of never/occasionally/often/always self-monitoring central bank actions/communications or relying on media reports to follow these events due to changes in the explanatory variable of interest, keeping all other explanatory variables at fixed values. In discussing the results in Section 4, we use average marginal effects, which are computed as the average of all marginal effects evaluated at each observation. That is, we keep all other explanatory variables at their fixed values for each observation while changing the variable of interest by one unit.

Finally, a caveat is in order so as to avoid misinterpretation of our empirical analysis. One could make the case that agents who self-monitor central bank news justify doing so by asserting the importance of that event. Likewise, those who follow media reports, for whatever reason, would be loath to admit that these reports could be unreliable. Consequently, we cannot exclude the possibility that simultaneity exists between the left-hand-side variables and the explanatory variables. Inasmuch as the regressors are indeed endogenous, the estimated coefficients reflect correlations between the means of monitoring central bank events as well as (i) the perceived importance of these events and (ii) the perceived reliability of media reporting on these events rather than causal effects.

4. Empirical Results

4.1. Self-Monitoring

We first take a closer look at the correlates of self-monitoring of central bank action and communication. Tables 6 and 7 present results for interest rate decisions and speeches. Tables A1 and A2 in the Appendix show the corresponding average marginal effects for the categories 1 = never and 4 = always.[26]

The results indicate that the stated reasons for directly monitoring central bank events are roughly the same for both actions and communications. In contrast, we find that the three groups of financial market actors give very different reasons for self-monitoring central banks.

[26] To conserve space, we do not report average marginal effects of the categories 2 = occasionally and 3 = often. Results are available on request.

Table 6: Self-Monitoring of Interest Rate Decisions (Q1a)

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
Central Banks	**14.0**	**[0.00]**	1.2	[0.75]	2.3	[0.51]
Bank of England	Ref.		Ref.		Ref.	
Bank of Japan	–0.358	(2.075)	–0.222	(1.015)	–0.221	(0.711)
European Central Bank	–3.590	(2.134)	0.824	(0.983)	0.724	(0.695)
Federal Reserve	**3.339**	**(1.632)**	–0.441	(1.093)	0.245	(0.630)
Reliability of Coverage	**13.5**	**[0.01]**	4.1	[0.40]	0.7	[0.95]
… BoE	**–0.576**	**(0.257)**	0.057	(0.170)	0.124	(0.163)
… BoJ	–0.011	(0.222)	0.099	(0.303)	–0.012	(0.182)
… ECB	0.274	(0.336)	0.101	(0.231)	0.017	(0.127)
… Fed	**–0.605**	**(0.215)**	0.348	(0.186)	0.071	(0.146)
Importance of Event	**28.2**	**[0.00]**	**22.7**	**[0.00]**	3.7	[0.45]
… BoE	0.343	(0.315)	**0.466**	**(0.117)**	–0.098	(0.088)
… BoJ	–0.040	(0.425)	**0.371**	**(0.113)**	–0.058	(0.084)
… ECB	0.534	(0.275)	**0.313**	**(0.157)**	–0.098	(0.103)
… Fed	–0.337	(0.326)	**0.401**	**(0.139)**	0.046	(0.077)
Home Bias	**11.5**	**[0.02]**	4.8	[0.31]	**56.6**	**[0.00]**
… BoE	–0.542	(0.558)	0.224	(0.272)	**0.647**	**(0.302)**
… BoJ	0.866	(0.586)	0.678	(0.483)	**1.751**	**(0.365)**
… ECB	**1.524**	**(0.762)**	0.337	(0.403)	**0.671**	**(0.281)**
… Fed	**1.963**	**(0.841)**	0.344	(0.378)	**0.759**	**(0.243)**
1st Cut Point	–1.304	(1.659)	0.645	(0.642)	–1.224	(0.634)
2nd Cut Point	–0.257	(1.656)	**1.639**	**(0.637)**	–0.109	(0.639)
3rd Cut Point	1.362	(1.837)	**2.522**	**(0.641)**	0.664	(0.640)
Observations	67		230		343	

Notes: Table shows coefficients and standard errors (in parentheses) of ordered probit models. Location-fixed effects are included but not reported. Chi^2 test statistics and p-values (in square brackets) of Wald joint exclusion tests are given in the top line of each variable group. Coefficients and test statistics in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

First, in the case of *asset managers* (left columns in Tables 6 and 7), the decision to self-monitor central bank events is associated with the belief that the media is 'unreliable'. For interest rate decisions, this effect can be found for the BoE and Fed, whereas for speeches, we observe significant coefficients for the BoE and ECB. For instance, the conditional probability to 'never' self-monitor Fed interest rate decisions increases by about 12 percentage points (pp) after a one-unit increase in the reliability of media coverage about the Fed. We also observe a significant home bias in the case of interest rate decisions. Respondents from Europe are almost 27 pp more likely to 'always' self-monitor ECB actions than are those living in other parts of the world. For the Fed, we do not only observe a home bias, but also a positive central-bank-fixed effect. Compared to the reference central bank, the BoE, asset managers have a 43 pp

greater likelihood of 'always' self-monitoring the Fed's interest rate decisions. In addition, the effect is even 34 pp larger for financial market participants from North America.

Table 7: Self-Monitoring of Speeches (Q1c)

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
Central Banks	2.0	[0.58]	2.8	[0.42]	2.5	[0.48]
Bank of England	Ref.		Ref.		Ref.	
Bank of Japan	–1.937	(2.113)	–0.957	(0.654)	–1.289	(0.880)
European Central Bank	0.333	(1.648)	0.546	(0.842)	–0.558	(0.882)
Federal Reserve	–1.028	(1.695)	–0.194	(1.151)	–0.517	(0.768)
Reliability of Coverage	**23.7**	**[0.00]**	1.9	[0.76]	2.3	[0.69]
… BoE	**–1.293**	**(0.380)**	0.151	(0.151)	0.094	(0.225)
… BoJ	–0.101	(0.310)	0.218	(0.206)	0.219	(0.183)
… ECB	**–0.870**	**(0.332)**	–0.017	(0.224)	0.169	(0.145)
… Fed	–0.422	(0.259)	0.079	(0.286)	0.127	(0.137)
Importance of Event	1.8	[0.77]	**15.3**	**[0.00]**	7.0	[0.14]
… BoE	0.720	(0.594)	**0.316**	**(0.140)**	–0.150	(0.134)
… BoJ	–0.053	(0.668)	**0.381**	**(0.137)**	0.093	(0.133)
… ECB	0.128	(0.356)	**0.369**	**(0.175)**	0.056	(0.126)
… Fed	0.255	(0.352)	**0.511**	**(0.154)**	0.145	(0.112)
Home Bias	3.0	[0.55]	1.9	[0.76]	**20.9**	**[0.00]**
… BoE	–0.173	(0.707)	0.134	(0.239)	**0.561**	**(0.285)**
… BoJ	1.132	(0.880)	0.321	(0.405)	**1.022**	**(0.291)**
… ECB	–0.437	(0.494)	0.245	(0.295)	0.164	(0.196)
… Fed	0.638	(0.773)	–0.182	(0.323)	0.393	(0.245)
1st Cut Point	–2.837	(1.587)	0.484	(0.618)	–0.838	(0.828)
2nd Cut Point	–1.012	(1.679)	**1.825**	**(0.668)**	0.483	(0.832)
3rd Cut Point	0.243	(1.891)	**2.906**	**(0.724)**	1.532	(0.841)
Observations	67		225		332	

Notes: Table shows coefficients and standard errors (in parentheses) of ordered probit models. Location-fixed effects are included but not reported. Chi^2 test statistics and p-values (in square brackets) of Wald joint exclusion tests are given in the top line of each variable group. Coefficients and test statistics in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

Second, for the group of *traders*, we find that the probability of self-monitoring a central bank event is positively related to its perceived importance. The average marginal effects of 'always' self-monitoring interest rate decisions are approximately 13 pp/11 pp/9 pp/11 pp for the BoE/BoJ/ECB/Fed, respectively. In the case of speeches, the effects associated with one-unit increase in the perceived importance of speeches by the corresponding central bank are roughly 4 pp (BoE), 5 pp (BoJ), 4 pp (ECB), and 6 pp (Fed). A Wald test of homogeneity indicates that coefficients for the event's importance

are statistically the same across central banks for both interest rate decisions and speeches.[27]

Third, for *portfolio managers* neither the reliability of media coverage nor the importance of central bank events is significantly related to the probability of self-monitoring. However, for this group we observe a significant home bias for all central banks in the case of interest rate decisions. The probability of 'always' self-monitoring central bank actions is about 21 pp (BoE), 56 pp (BoJ), 21 pp (ECB), and 24 pp (Fed) larger for portfolio managers living in the respective central bank's home region compared to those who do not. For communications, we find that respondents from the United Kingdom and Japan have a significantly higher conditional likelihood of 'always' self-monitoring speeches by the BoE (8 pp) and BoJ (14 pp), respectively.

4.2. Reliance on Media Reports

Next, we turn to the determinants of relying on media reports to monitor monetary policy action and communication. Tables 8 and 9 present results for interest rate decisions and speeches. Tables A3 and A4 in the Appendix show the corresponding average marginal effects for the categories 1 = never and 4 = always.

In contrast to the previous findings, market persistence of central bank events does not play a significant role for any of the three groups of financial market actors. Thus, the decision to monitor an event via media reports is not directly related to the event's perceived financial market impact. In addition, when it comes to using media reports to follow central bank events, respondents do not differentiate much between the home central bank and the other central banks. The indicator variables measuring home bias are insignificant in all but one case.

For *asset managers*, the perceived reliability of media coverage is positively related to the use of media reports for monitoring interest rate decisions. The average marginal effects of 'always' using media reports are about 19 pp (BoJ), 17 pp (ECB), and 22 pp (Fed). In addition, there are significant central-bank-fixed effects. Compared to the BoE, the conditional likelihood that the Fed's actions and the ECB's speeches are monitored 'often' using media reports are approximately 67 pp and 49 pp lower, respectively.

[27] $Chi^2(3) = 1.6$ [0.66] and $Chi^2(3) = 2.0$ [0.58], respectively.

Table 8: Monitoring Interest Rate Decisions via Media Reporting (Q1b)

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
Central Banks	**9.5**	**[0.02]**	3.1	[0.38]	5.1	[0.17]
Bank of England	Ref.		Ref.		Ref.	
Bank of Japan	–3.830	(2.923)	–0.113	(0.777)	–1.224	(0.685)
European Central Bank	–1.695	(1.793)	0.798	(0.712)	–0.375	(0.602)
Federal Reserve	**–4.610**	**(1.612)**	1.390	(0.985)	0.196	(0.737)
Reliability of Coverage	**18.7**	**[0.00]**	**11.5**	**[0.02]**	4.5	[0.35]
… BoE	0.276	(0.298)	**0.479**	**(0.182)**	–0.155	(0.177)
… BoJ	**0.710**	**(0.273)**	**0.800**	**(0.247)**	0.125	(0.170)
… ECB	**0.639**	**(0.281)**	**0.439**	**(0.215)**	0.053	(0.133)
… Fed	**0.836**	**(0.358)**	0.320	(0.234)	–0.138	(0.202)
Importance of Event	**12.2**	**[0.02]**	6.3	[0.18]	3.2	[0.52]
… BoE	–0.131	(0.214)	0.159	(0.122)	–0.095	(0.083)
… BoJ	0.444	(0.513)	–0.070	(0.108)	0.074	(0.086)
… ECB	0.123	(0.239)	–0.054	(0.139)	–0.097	(0.100)
… Fed	0.560	(0.345)	–0.092	(0.135)	–0.054	(0.079)
Home Bias	4.7	[0.32]	4.6	[0.33]	6.1	[0.19]
… BoE	–0.540	(0.556)	–0.388	(0.241)	**0.377**	**(0.170)**
… BoJ	0.374	(0.546)	0.214	(0.357)	0.071	(0.274)
… ECB	0.448	(0.591)	–0.339	(0.276)	0.283	(0.246)
… Fed	–0.695	(0.558)	–0.169	(0.291)	–0.145	(0.288)
1st Cut Point	–1.854	(1.549)	0.493	(0.745)	**–2.339**	**(0.680)**
2nd Cut Point	–0.220	(1.596)	**1.675**	**(0.742)**	–1.219	(0.670)
3rd Cut Point	1.207	(1.711)	**2.755**	**(0.785)**	–0.085	(0.664)
Observations	67		226		343	

Notes: Table shows coefficients and standard errors (in parentheses) of ordered probit models. Location-fixed effects are included but not reported. Chi^2 test statistics and p-values (in square brackets) of Wald joint exclusion tests are given in the top line of each variable group. Coefficients and test statistics in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

For *traders*, the media's perceived reliability is the only significant variable. A one-unit increase in this variable is associated with a 16 pp/27 pp/15 pp higher conditional likelihood of 'always' using media reports to monitor interest rate decisions by the BoE/BoJ/ECB. The corresponding average marginal effect is about 15 pp for 'always' using media reports in the case of speeches by BoJ officials.

Finally, our explanatory variables do not really explain why *portfolio managers* choose to use media reports as a means of monitoring central banks. The only significant variable in our estimations is a home bias for portfolio managers from the United Kingdom, who use media reports more often for monitoring the BoE's interest rate decisions than do their colleagues from other parts of the world: the probability that they 'always' employ media reports is roughly 13 pp higher.

Table 9: Monitoring Speeches via Media Reporting (Q1d)

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
Central Banks	**8.3**	**[0.04]**	0.3	[0.97]	5.4	[0.15]
Bank of England	Ref.		Ref.		Ref.	
Bank of Japan	**–4.130**	**(1.901)**	–0.210	(0.818)	–1.159	(0.874)
European Central Bank	**–2.178**	**(0.985)**	–0.016	(0.755)	0.146	(0.728)
Federal Reserve	–1.172	(1.952)	0.307	(0.936)	0.803	(0.749)
Reliability of Coverage	6.3	[0.18]	6.3	[0.18]	2.3	[0.69]
… BoE	–0.473	(0.282)	0.273	(0.173)	–0.089	(0.223)
… BoJ	0.359	(0.291)	**0.479**	**(0.202)**	0.164	(0.243)
… ECB	–0.043	(0.273)	0.338	(0.209)	0.050	(0.142)
… Fed	0.113	(0.391)	0.356	(0.239)	–0.181	(0.197)
Importance of Event	7.1	[0.13]	1.9	[0.75]	5.0	[0.29]
… BoE	–0.374	(0.360)	0.190	(0.148)	–0.016	(0.128)
… BoJ	0.327	(0.718)	0.066	(0.130)	0.173	(0.151)
… ECB	0.266	(0.406)	0.103	(0.173)	–0.167	(0.139)
… Fed	–0.205	(0.370)	0.038	(0.165)	–0.086	(0.147)
Home Bias	1.5	[0.82]	6.0	[0.20]	6.2	[0.19]
… BoE	0.367	(1.165)	0.084	(0.271)	0.290	(0.245)
… BoJ	–0.538	(0.829)	0.316	(0.398)	–0.080	(0.293)
… ECB	–0.246	(0.815)	0.354	(0.239)	0.236	(0.232)
… Fed	–0.718	(0.830)	–0.473	(0.275)	0.333	(0.307)
1st Cut Point	**–3.939**	**(1.556)**	0.049	(0.812)	**–1.860**	**(0.743)**
2nd Cut Point	–2.129	(1.512)	1.275	(0.780)	–0.431	(0.761)
3rd Cut Point	0.086	(1.540)	**2.416**	**(0.798)**	0.970	(0.782)
Observations	68		224		335	

Notes: Table shows coefficients and standard errors (in parentheses) of ordered probit models. Location-fixed effects are included but not reported. Chi^2 test statistics and p-values (in square brackets) of Wald joint exclusion tests are given in the top line of each variable group. Coefficients and test statistics in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

Thus, in general, perceived reliability of media coverage is a significant factor explaining reliance on it (except in the case of portfolio/liability managers). However, as mentioned in Section 2.3, some respondents raised serious concerns about the selectiveness of the media and its potential misinterpretation of events.

5. Conclusions

In this paper, we provide an answer to the question of how financial market participants process news from four major central banks—the Bank of England, the Bank of Japan, the European Central Bank, and the Federal Reserve. To the best of our knowledge, this is the first paper to take a closer look at how financial agents digest central bank news. We use a worldwide survey of financial market participants to study how financial

agents monitor central bank actions and communications and to what extent the media works as a news transmitter.

In the first step of our investigation, we conduct an extensive descriptive analysis that reveals several items of interest. First, market participants rely more on media reporting to learn about central bank events than on self-monitoring. The only exception is interest rate decisions by the central bank in the respondent's home region. In addition, the general attention level—irrespective of whether events are self-monitored or followed via media reporting—is higher for interest rate decisions than for speeches. Comparing financial market actors' attention level across central banks reveals a distinct hierarchy: the Fed is monitored most closely, followed by the ECB, the BoJ, and the BoE. Financial agents spend relatively more time self-monitoring central bank events when it is their home central bank. Second, interest rate decisions are perceived as having a more persistent impact on financial markets than do speeches. Third, market participants are, on average, satisfied with the media's coverage of central banks. Qualitative statements by some respondents indicate, however, that there are problems with respect to the perceived quality of media reporting.

In the second step, we estimate ordered probit models to study the relationship between self-monitoring central bank news or relying on media coverage with indicators measuring the perceived importance of events, reliability of media coverage, and home bias. We conduct a separate analysis for three groups of financial market participants. First, we find that for asset managers the reliability of media coverage is negatively associated with the degree of self-monitoring and positively related to the probability of using media reports to follow central bank events. Second, if traders perceive the financial market impact of actions and communications as particularly persistent, then the conditional likelihood of monitoring these events directly increases. Similar to what we find for asset managers, perceived media reliability is positively related to traders' use of media reports to monitor central bank events. Finally, neither the reliability of media coverage nor the importance of central bank events is significantly related to the probability of central bank watching for portfolio managers. For this group, we only observe significant home biases for some central banks, especially when self-monitoring interest rate decisions and speeches.

As the management of expectations is a key element of modern central banking (Woodford, 2005) and the media influences market participants' expectations, central bankers should consider clarifying their language and, as one of the respondents put it,

cutting back of the ‘jargon that only very few outside central banks understand and feel at ease with’. This would decrease the chances of media misinterpretation of events. However, sometimes financial market participants find it very important to directly interpret what the central bank is saying to avoid possible media misinterpretation or even misinformation. Thus, media reporting cannot fully substitute for self-monitoring, which may explain why central banks have been expending so much effort on improving their direct communication with financial market participants.

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Appendix

Table A1: Self-Monitoring of Interest Rate Decisions—Average Marginal Effects

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
	Pr(1)	Pr(4)	Pr(1)	Pr(4)	Pr(1)	Pr(4)
Central Banks						
Bank of England	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Bank of Japan	5.5	–3.1	4.9	–5.5	4.6	–6.2
	(30.4)	(17.9)	(22.7)	(24.4)	(15.1)	(20.0)
European Central Bank	**41.9**	**–28.0**	–12.2	23.7	–9.4	23.9
	(14.3)	**(9.6)**	(14.1)	(27.3)	(10.0)	(21.6)
Federal Reserve	**–32.0**	**43.3**	10.2	–10.3	–4.1	7.7
	(12.7)	**(14.7)**	(26.1)	(23.8)	(10.7)	(19.8)
Reliability of Coverage						
… BoE	11.6	–10.1	–1.1	1.6	–1.9	4.0
	(6.0)	(5.3)	(3.2)	(4.8)	(2.5)	(5.2)
… BoJ	0.2	–0.2	–1.9	2.8	0.2	–0.4
	(4.5)	(3.9)	(5.8)	(8.6)	(2.8)	(5.8)
… ECB	–5.5	4.8	–1.9	2.9	–0.3	0.5
	(7.2)	(5.6)	(4.4)	(6.5)	(1.9)	(4.0)
… Fed	**12.2**	**–10.6**	–6.6	9.9	–1.1	2.3
	(5.4)	**(4.1)**	(3.9)	(5.2)	(2.2)	(4.7)
Importance of Event						
… BoE	–6.9	6.0	**–8.8**	**13.3**	1.5	–3.1
	(6.4)	(5.3)	**(2.5)**	**(3.3)**	(1.4)	(2.8)
… BoJ	0.8	–0.7	**–7.0**	**10.6**	0.9	–1.9
	(8.7)	(7.5)	**(2.2)**	**(3.3)**	(1.3)	(2.7)
… ECB	**–10.8**	**9.3**	–6.0	**8.9**	1.5	–3.1
	(5.1)	**(4.3)**	(3.1)	**(4.2)**	(1.6)	(3.3)
… Fed	6.8	–5.9	**–7.6**	**11.4**	–0.7	1.5
	(6.8)	(6.1)	**(3.1)**	**(3.8)**	(1.2)	(2.5)
Home Bias						
… BoE	11.0	–9.5	–4.3	6.4	**–9.9**	**20.7**
	(12.1)	(9.8)	(5.2)	(7.7)	**(4.8)**	**(9.4)**
… BoJ	–17.5	15.2	–12.9	19.3	**–26.7**	**55.9**
	(9.9)	(10.0)	(9.3)	(13.7)	**(6.1)**	**(11.0)**
… ECB	–30.8	**26.7**	–6.4	9.6	**–10.2**	**21.4**
	(17.4)	**(12.1)**	(7.7)	(11.3)	**(4.4)**	**(8.6)**
… Fed	**–39.7**	**34.4**	–6.5	9.8	**–11.6**	**24.2**
	(19.0)	**(14.3)**	(7.3)	(10.6)	**(3.8)**	**(7.8)**

Notes: Table shows average marginal effects and standard errors (in parentheses) of ordered probit models for the categories 1 = never and 4 = always. Average marginal effects of the categories 2 = occasionally and 3 = often are available on request. Location-fixed effects are included but not reported. Marginal effects in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

Table A2: Self-Monitoring of Speeches—Average Marginal Effects

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
	Pr(1)	Pr(4)	Pr(1)	Pr(4)	Pr(1)	Pr(4)
Central Banks						
Bank of England	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Bank of Japan	41.1	−15.9	30.5	−7.6	34.1	−18.3
	(39.0)	(25.6)	(20.1)	(6.7)	(19.8)	(17.4)
European Central Bank	−5.2	5.7	−11.7	10.1	11.6	−11.1
	(26.2)	(26.7)	(16.3)	(18.7)	(17.3)	(19.1)
Federal Reserve	20.5	−11.8	5.4	−2.4	10.5	−10.5
	(28.6)	(26.7)	(32.7)	(13.8)	(14.2)	(17.6)
Reliability of Coverage						
… BoE	**31.7**	−9.0	−4.3	1.8	−2.5	1.3
	(10.1)	(6.4)	(4.1)	(1.8)	(6.0)	(3.2)
… BoJ	2.5	−0.7	−6.2	2.6	−5.9	3.1
	(7.7)	(2.2)	(5.7)	(2.6)	(4.9)	(2.8)
… ECB	**21.3**	−6.1	0.5	−0.2	−4.5	2.4
	(8.1)	(3.9)	(6.3)	(2.7)	(3.9)	(2.1)
… Fed	10.4	−2.9	−2.2	0.9	−3.4	1.8
	(7.0)	(1.9)	(8.1)	(3.4)	(3.7)	(2.0)
Importance of Event						
… BoE	−17.7	5.0	**−8.9**	3.8	4.0	−2.1
	(14.4)	(4.4)	**(3.7)**	(2.1)	(3.6)	(2.0)
… BoJ	1.3	−0.4	**−10.7**	**4.6**	−2.5	1.3
	(16.4)	(4.7)	**(3.6)**	**(2.1)**	(3.6)	(1.8)
… ECB	−3.1	0.9	**−10.4**	**4.4**	−1.5	0.8
	(8.7)	(2.4)	**(4.5)**	**(2.3)**	(3.4)	(1.7)
… Fed	−6.3	1.8	**−14.4**	**6.1**	−3.9	2.0
	(8.4)	(2.5)	**(4.1)**	**(2.6)**	(3.0)	(1.5)
Home Bias						
… BoE	4.3	−1.2	−3.8	1.6	−15.1	**7.9**
	(17.5)	(5.1)	(6.8)	(2.7)	(7.8)	**(4.0)**
… BoJ	−27.8	7.9	−9.1	3.8	**−27.5**	**14.3**
	(21.8)	(5.7)	(11.5)	(4.9)	**(8.1)**	**(4.4)**
… ECB	10.7	−3.0	−6.9	2.9	−4.4	2.3
	(11.8)	(3.9)	(8.3)	(3.5)	(5.4)	(2.7)
… Fed	−15.7	4.4	5.1	−2.2	−10.6	5.5
	(19.5)	(5.9)	(9.0)	(3.8)	(6.6)	(3.6)

Notes: Table shows average marginal effects and standard errors (in parentheses) of ordered probit models for the categories 1 = never and 4 = always. Average marginal effects of the categories 2 = occasionally and 3 = often are available on request. Location-fixed effects are included but not reported. Marginal effects in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

Table A3: Monitoring Interest Rate Decisions via Media Reporting—Average Marginal Effects

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
	Pr(1)	Pr(4)	Pr(1)	Pr(4)	Pr(1)	Pr(4)
Central Banks						
Bank of England	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Bank of Japan	30.5	−57.6	2.1	−2.6	18.6	**−32.8**
	(33.3)	(31.3)	(14.7)	(17.6)	(14.5)	**(16.6)**
European Central Bank	7.0	−23.4	−10.0	21.8	3.2	−12.1
	(15.1)	(21.2)	(9.7)	(18.8)	(4.9)	(19.6)
Federal Reserve	41.9	**−66.8**	−13.1	39.1	−1.1	6.6
	(27.2)	**(8.6)**	(11.4)	(21.0)	(4.1)	(24.6)
Reliability of Coverage						
… BoE	−1.6	7.3	−3.8	**16.1**	1.3	−5.5
	(1.8)	(7.6)	(2.2)	**(5.6)**	(1.5)	(6.3)
… BoJ	−4.1	**18.7**	**−6.4**	**26.9**	−1.0	4.4
	(2.3)	**(6.7)**	**(3.0)**	**(7.6)**	(1.4)	(6.0)
… ECB	−3.7	**16.8**	−3.5	**14.8**	−0.4	1.9
	(2.8)	**(6.5)**	(2.4)	**(6.9)**	(1.1)	(4.7)
… Fed	−4.9	**22.0**	−2.6	10.8	1.1	−4.9
	(3.6)	**(9.3)**	(2.3)	(7.6)	(1.7)	(7.2)
Importance of Event						
… BoE	0.8	−3.5	−1.3	5.4	0.8	−3.4
	(1.4)	(5.9)	(1.0)	(4.2)	(0.7)	(3.0)
… BoJ	−2.6	11.7	0.6	−2.4	−0.6	2.6
	(3.7)	(13.4)	(0.9)	(3.7)	(0.8)	(3.0)
… ECB	−0.7	3.2	0.4	−1.8	0.8	−3.4
	(1.5)	(6.2)	(1.2)	(4.7)	(0.9)	(3.5)
… Fed	−3.3	14.8	0.7	−3.1	0.4	−1.9
	(2.4)	(8.4)	(1.2)	(4.5)	(0.7)	(2.8)
Home Bias						
… BoE	3.1	−14.2	3.1	−13.1	**−3.1**	**13.4**
	(4.0)	(14.5)	(2.2)	(8.1)	**(1.4)**	**(6.1)**
… BoJ	−2.2	9.9	−1.7	7.2	−0.6	2.5
	(3.4)	(14.9)	(2.9)	(12.1)	(2.3)	(9.7)
… ECB	−2.6	11.8	2.7	−11.4	−2.3	10.0
	(4.0)	(15.0)	(2.3)	(9.3)	(2.1)	(8.7)
… Fed	4.1	−18.3	1.4	−5.7	1.2	−5.1
	(4.2)	(14.6)	(2.3)	(9.8)	(2.4)	(10.2)

Notes: Table shows average marginal effects and standard errors (in parentheses) of ordered probit models for the categories 1 = never and 4 = always. Average marginal effects of the categories 2 = occasionally and 3 = often are available on request. Location-fixed effects are included but not reported. Marginal effects in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).

Table A4: Monitoring Speeches via Media Reporting—Average Marginal Effects

	Asset Alloc.		Exec./Trad.		Portf./Liab. Man.	
	Pr(1)	Pr(4)	Pr(1)	Pr(4)	Pr(1)	Pr(4)
Central Banks						
Bank of England	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Bank of Japan	46.6	**–48.9**	2.4	–6.2	19.4	–19.7
	(33.6)	**(20.2)**	(9.9)	(23.9)	(19.4)	(14.8)
European Central Bank	14.2	–36.8	0.2	–0.5	–1.1	3.9
	(12.2)	(23.3)	(7.6)	(23.5)	(5.4)	(19.1)
Federal Reserve	5.1	–22.0	–2.5	10.1	–3.6	24.0
	(11.4)	(41.4)	(7.5)	(30.6)	(4.6)	(20.9)
Reliability of Coverage						
… BoE	3.2	–5.8	–2.6	8.7	0.5	–2.6
	(2.7)	(3.8)	(1.8)	(5.3)	(1.4)	(6.4)
… BoJ	–2.4	4.4	–4.5	**15.2**	–1.0	4.7
	(1.9)	(3.5)	(2.5)	**(6.2)**	(1.5)	(7.0)
… ECB	0.3	–0.5	–3.2	10.7	–0.3	1.4
	(1.9)	(3.4)	(2.2)	(6.4)	(0.9)	(4.1)
… Fed	–0.8	1.4	–3.4	11.3	1.1	–5.2
	(2.8)	(4.8)	(2.6)	(7.5)	(1.2)	(5.7)
Importance of Event						
… BoE	2.5	–4.6	–1.8	6.0	0.1	–0.5
	(2.7)	(4.6)	(1.6)	(4.8)	(0.8)	(3.7)
… BoJ	–2.2	4.0	–0.6	2.1	–1.0	5.0
	(5.0)	(8.3)	(1.3)	(4.1)	(1.0)	(4.3)
… ECB	–1.8	3.3	–1.0	3.3	1.0	–4.8
	(3.0)	(5.0)	(1.6)	(5.5)	(0.9)	(4.0)
… Fed	1.4	–2.5	–0.4	1.2	0.5	–2.5
	(2.5)	(4.7)	(1.6)	(5.2)	(0.9)	(4.2)
Home Bias						
… BoE	–2.5	4.5	–0.8	2.7	–1.7	8.3
	(8.0)	(14.4)	(2.5)	(8.5)	(1.5)	(7.0)
… BoJ	3.7	–6.6	–3.0	10.0	0.5	–2.3
	(5.9)	(9.7)	(4.1)	(12.6)	(1.7)	(8.4)
… ECB	1.7	–3.0	–3.3	11.2	–1.4	6.8
	(5.6)	(10.1)	(2.8)	(7.5)	(1.4)	(6.6)
… Fed	4.9	–8.8	4.5	–15.0	–2.0	9.6
	(6.9)	(10.0)	(3.0)	(8.6)	(2.1)	(8.8)

Notes: Table shows average marginal effects and standard errors (in parentheses) of ordered probit models for the categories 1 = never and 4 = always. Average marginal effects of the categories 2 = occasionally and 3 = often are available on request. Location-fixed effects are included but not reported. Marginal effects in bold are significant at the 5% level. Standard errors are clustered at the respondents' level (Rogers, 1993).